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TITLE: Cog display device for forming pads of opaque metal material

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Basic Abstract Text - ABTX (1):

NOVELTY - A display device having a COG(Chip On Glass) type package structure is provided to prevent short between bumps from occurring and facilitate monitoring by forming pads of an opaque metal material and connecting pad electrodes with the bumps and forming a recessed portion at a contact portion of the bumps.

Basic Abstract Text - ABTX (2):

DETAILED DESCRIPTION - A COG display device includes an array device formed in a display region of a first substrate(310), a plurality of pads formed in a non-display region of the first substrate, a first hole partially exposing the pad at a region covering the pads, and an insulating layer having a second hole that opens a first region adjacent to the pads. The COG display device includes a plurality of transparent conductive pad electrodes(328), an ACF(Anisotropic Conductive Film)(332), and a driving IC(338). The transparent conductive pad electrodes are connected with the pads through the first hole on the insulating layer, and have a recessed portion(324) of the first region at a region covering the second hole. The ACF is formed at a region covering the pad electrodes and has a plurality of conductive balls(330). The driving IC(338) has a plurality of bumps(334) positioned in the recessed portion, and is electrically connected with the pad electrodes to generate signals for operating the array device.

